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ABSTRACT

This study looks at the relationships between ages, the distance individuals live from the seashore, their perceptions of the marine environment, and their opinions in the precollege school system. Data were gathered using a questionnaire distributed on the coast of Maine between Southwest Harbor and Portland, and inland from the coast for 119 miles. The results showed that most people agree that the marine environment and knowledge of it are important. As people advance in age, there is a tendency toward the opinion that the seashore belongs to certain people and not the general public. With increasing age, there was also a trend toward the feeling that the public schools are not a good place to teach marine education. The effect of distance from the seashore on these items was generally the same as the effect of age. (BB)

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CITIZENS' PERCEPTIONS OF THE MARINE ENVIRONMENT
AND THE PLACEMENT OF PRECOLLEGE MARINE EDUCATION
INSTRUCTION IN THE PUBLIC SCHOOLS

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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INTRODUCTION

A valid and rising concern for Americans' understanding of their relationship to the sea has recently been identified (Goodwin and Schaadt, 1978; Goodwin, 1977). Although Americans have a long standing ocean heritage, as well as a current, daily dependence upon the sea, they have, over the past two-hundred and two years as Goodwin and Schaadt (1978) point out, become a land-oriented people. Understanding of the magnitude and complexity of this human life - ocean environment relationship has digressed to the point where many citizens are no longer able to make rational ocean-related decisions based upon knowledge. Rather, when asked to vote upon marine environmentally sensitive issues, many citizens must resort to emotion or to voting as their neighbors do. Yet, as world food reserves become increasingly depleted by expanding population, air pollution becomes ever greater, energy needs increase, and so on, - the ocean may be humanity's only salvation. The ocean might yield desperately needed additional food and oxygen supplies. Ocean thermal energy might be harnessed to help fill mankind's needs, and subocean floors might yield rich new fossil fuel supplies. Therefore, it is paramount that future citizens (today's youth) fully understand their relationship to the ocean and how this environment can be best used to the full advantage of all society without causing its destruction.

Implicit in the need for understanding is the impetus for a new type of education program. This program should foster in students an awareness of the marine environment; that is, it should be directed toward educating a marine literate individual. Further, such a program should range from birth to old age, and be cross-disciplinary in nature.

While government and educational leaders have already conceded the need for

marine education programs, an essential ingredient stands in the way of such program development and possibilities for success. Tax payers and future tax payers must be consulted. It is they who must not only financially support such educational program development and conduct, but also psychologically support such programs. This may be accomplished by impressing upon young Americans the need to learn as much as possible about the marine environment. Also, since it is the general public who pay for education they should also be consulted concerning the actual placement of marine education within the total educational scheme.

THE PROBLEM

Since, presently, a dearth of information exists about public perceptions of the marine environment and marine education, it was felt a data base must be established before marine educational programs could be developed. The primary purpose of this study was to begin the establishment of such a base. This was accomplished by seeking, specifically, answers to the following research questions:

1. Is there a relationship between the distance individuals live from the sea, their perceptions of the marine environment, and the placement of marine education in the precollege school system?
2. Is there a relationship between age and individuals' perceptions of the marine environment, and the placement of marine education in the precollege school system?

METHODS

The data were gathered, using a randomly distributed questionnaire.

INSERT QUESTIONNAIRE ABOUT HERE

The questionnaire was distributed on the coast of Maine between Southwest Harbor and Portland, a distance of approximately 180 miles. In addition, the range of distribution inland from the coast was 119 miles. Further, the questionnaire was distributed between November 1975 and April 1976.

The questionnaire contained three types of items. There were personal items asking the respondents' ages, home towns, and distances lived from the coast. Secondly, there were Likert-type items with five response categories [(1) strongly agree; (2) agree; (3) no opinion; (4) disagree; (5) strongly disagree]. Finally, there was one item requiring the choice between alternatives - know and don't know.

Likert-type items were assigned weights of 1 to 5, beginning with "strongly agree", and for purposes of statistical analysis, each was assumed to be a separate attitude continuum. Likewise, the age and distance variables were also assumed to form continua.

All data were tabulated and manipulated, using subprograms from Statistical Package for the Social Sciences. (Nie, H. N.; Hull, C. H.; Jenkins, J. G.; Steinbrenner, K.; and Bent, D. H. 1975). The subprograms, Condescriptive, Frequencies, Pearson Correlation and Crosstabs were used to accomplish the actual tabulations and manipulations.

SAMPLE

A sample of 208 was used. They ranged in age from 144.0 months to 888.0 months, with a mean age of 279.0 months, and standard deviation of 161.495 months. Sixty-four percent of the sample were contained in five age categories. The categories, their populations, and percentages were: (1) 168 months, 31, 14.9%; (2) 180 months, 32, 15%; (3) 192 months, 178.2%; (4) 204 months, 38, 18.3%; (5) 216 months, 15, 7.2%.

The closest respondent lived one mile from the coast and the most

distant - 120 miles. The mean distance lived from the coast was 37.856 miles and the standard deviation 34.285 miles. Eight individual mileages contained more than two respondents and accounted for 86.4% of all respondents. A compilation of these data is provided in Table 1.

INSERT TABLE 1 ABOUT HERE

RESULTS

The data were tabulated by age and distance lived from the sea coast. Seven age categories of similar breadth and six mileage categories of similar breadth were used. The age range categories in months were 120-240; 241-360; 361-480; 481-600; 601-720; 721-840; 841; 960; and their respective populations were 144, 16, 24, 10, 7, 5, 2. The mileage range categories were 0-20, 21-40, 41-60, 61-80, 81-100, and 101-120, while their respective populations were 81, 41, 41, 8, 34, and 3. These data tabulations are provided in Tables 2 through 29.

INSERT TABLES 2 THROUGH 29 ABOUT HERE

Pearson Product Moment Correlations were computed between age and each Likert-type item and between distance and each Likert-type item. Four Pearson correlations were significant ($p < .05$). The relationships and their corresponding r 's were: age vs. item 2, $r = .235$; age vs. item 7, $r = .150$; distance vs. item 3, $r = .213$; distance vs. item 9, $r = .204$. See Table 30.

INSERT TABLE 30 ABOUT HERE

DISCUSSION

That substantial majorities of respondents, regardless of age, agree upon

the importance of the marine environment and the knowledge citizens have of it (questionnaire items 1 - 7) is a positive sign. The correlation between age and ownership of the seashore areas ($r = .235$) suggests that as people advance in age they tend more to think the seashore belongs to specific individuals and not the general public. Also, the data suggests that as individuals advance in age there is a trend toward a feeling that the public schools are not a good place to teach people about the marine environment ($r = .150, p \leq .030$).

It is encouraging to note that there was little if any relationship between age and the fact that teachers be required some introduction to the marine environment prior to being allowed to offer such instructions to their class. However, a certain liability is incurred on the part of the public by taking this stance. It may not be possible for teachers to offer such instruction even if there is a public mandate to do so, because this type of continuing education is not, generally, readily available. Further, this stance suggests a willingness on the part of the public to pay for teachers continuing education in the marine area.

The responses to the age vs. knowledge of already existent marine science instruction item is probably biased by the number of respondents in the 120-240 age category. Many of the 60 respondents in this category who said they know about this type of instruction in their school may well have been involved in it. It is hypothesized that a random sample of students at the precollege level in a given area would show this to be the case. From this it follows that a generally greater majority than is evidenced here do not know whether marine instruction is offered in their school system.

Responses to items 10a, b, and c suggests from a public perspective, grades 7 and 12 are the best for offering marine related instruction.

Career and vocational information are essential ingredients of any good

marine science educational program is a statement well supported by our statistics (176/208). It might follow, although beyond the scope of this writing, that at the precollege level any good science program includes career and vocationally oriented information.

The effect of distance upon responses was generally the same for items 1 - 8 as it was for age. However, the Pearson correlation between distance and whether or not the marine environment can be used wisely to the benefit of all society ($r = -.213$, $p \leq .002$), suggests the closer people live to the coast the less likely they are to agree with the premise.

An interesting but expected trend surfaced with the relationship between distance and knowledge of what occurs in the school system. If the "know/don't know" responses are considered a continuum, assuming some people had an idea but didn't really categorically know or not know, then the closer one lives to the coast the more likely that person is to know whether or not the local school system offers some marine-related instruction ($r = .204$, $p \leq .003$). Also, there may be a bias introduced here since the closer schools are to the coast the more likely that are to offer this type of instruction and, therefore, the more likely one would be to know of such instruction.

As with age, when the distance variable is substituted in the equation, grades 7 - 12 seem to be the most acceptable areas for marine-related instruction.

Again, citizens, regardless of the distance they live from the coast, agreed (176/208) that essential parts of a marine program were career and vocational education components.

An obvious mandate for formal education is that citizens felt daily life activities would not teach people all they needed to know about the marine environ. This is a solid mandate and stands regardless of age or distance lived from the coast.

CONCLUSIONS

The following general conclusions were drawn from the findings of the study as they relate to the northeast coast of the United States.

1. The marine environment is perceived by the public as being important to their daily lives.
2. People generally agree the seashore belongs to everyone, but the older they become the more likely they are to take the opposite stance.
3. The further one goes from the coast the more likely he or she will find citizens agreeing the marine environment can be used wisely to the benefit of everyone.
4. In order to make wise decisions about the marine environment, people generally feel they must understand sea life and how man relates to sea life.
5. The public agrees our children should be provided as much information as possible about the marine environment, children can assimilate much of this knowledge at an early age, and the schools are a good place to teach children about the marine environment. Also, the older people are, the less likely they are to agree the schools are a good place to offer this instruction. Finally, the public feels children will not learn all they need to know about the marine environment through daily life activities.
6. People generally feel teachers should have some marine science background before being allowed to offer such instruction in their own classes.
7. Provided there is no substantial increase in tax load, grades 7 - 12 are the most acceptable places to offer marine environmentally oriented instruction, and such instruction should include career and vocationally oriented information.

The results of this study should be used with caution since their generalizability beyond northern New England is as yet untested.

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Goodwin, H. L. An Introduction to Marine Education. University of Delaware, College of Marine Studies, April 1977.

Goodwin, H. L. and Schaadt, J. G. The Need for Marine and Aquatic Education. University of Delaware, College of Marine Studies, March 1978.

Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, K., Bent, D. H. Statistical Package for the Social Sciences. New York: McGraw Hill Book Company, 1975.

MARINE SCIENCE QUESTIONNAIRE

Recent oil company controversies, oil spills, nuclear power plant construction, and other proposed coastal industrial development as well as threatened damage to the lobster and clam industry and coastal recreation, have propelled the question of the wise use of the marine environment, into the limelight. The question of how wise is defined seems to vary from person to person.

The answers which you provide on this questionnaire will allow us (the Department of Science Education of the University of Maine) to assess the needs and priorities in the marine sciences and marine science education as they relate to the State of Maine. Your cooperation in this endeavor is gratefully appreciated.

Please provide information in the first four spaces as it relates to you. For the remaining statements, place an "X" after the word which best identifies the way you feel about the statement.

A. Town in which you live _____

B. Your age _____

C. Your occupation or profession _____

D. Distance your home is from the coast _____

1. The marine environment, for example, the seashore and off-shore areas, are very important to our everyday lives.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

2. The seashore areas belong to everyone.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

3. The marine environment can be used wisely, to the benefit of all the states citizens, without being damaged.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

4. In order to make wise decisions concerning coastal and off-shore areas, one must have some knowledge of sea life in these areas and how man relates to the total scheme.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

5. Our children should be provided with as much information as possible concerning the marine environment.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

6. Children can learn much about the marine environment at an early age.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

7. The schools would be a good place to teach children about the marine environment.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

8. Before being allowed to present information about the marine environment, teachers should be required to undergo some sort of training in this area, e. g., a marine science education course or a marine science education workshop.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

9. Some marine science instruction is already offered in our school system.

Know ___ Don't know ___

10. Provided there is no great increase in tax load, marine science instruction should be offered from kindergarten through grade 12.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

Offered from grades 7 through 12.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

Offered only in grades 9 through 12.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

11. Career and vocational information about the marine sciences is part of a good marine science educational program.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

12. The public schools are not a good place to offer marine science instruction, children will learn all they need to know about the marine environment from daily life activities. They will know enough about this environment to make wise decisions about it when future questions arise.

Strongly agree ___ Agree ___ No opinion ___ Disagree ___ Strongly disagree ___

If you have comments or suggestions concerning what should be included in a marine science program, were it being designed for your school, please send them on to:

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Table 1

Numbers and Percentages of Respondents in the Eight Most Populated Mileage Categories

Miles Lived from the Ocean	Number of Respondents	% of Total No. of Respondents
1.0	66	31.7
2.0	4	1.9
3.0	4	1.9
40.0	38	18.3
45.0	16	7.7
50.0	20	9.6
90.0	14	6.7
95.0	18	8.7
Total	180	86.4

Table 2

Responses by Age to: The Marine Environment, for Example, the Seashore and Off Shore Areas Are Very Important to Our Everyday Lives (Item 1)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strong Disagree	Total
120-240	73	54	8	8	1	144
241-360	10	6	0	0	0	16
361-480	17	7	0	0	0	24
481-600	7	1	1	1	0	10
601-720	1	6	0	0	0	7
721-840	2	3	0	0	0	5
841-960	0	2	0	0	0	2
Total	110	79	9	9	1	208

Table 3

Responses by Age to: The Seashore Areas Belong to Everyone (Item 2)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	77	47	11	6	3	144
241-360	5	9	0	2	0	16
361-480	8	10	0	6	0	24
481-600	5	2	1	0	2	10
601-720	0	5	1	0	1	7
721-840	2	1	1	1	0	5
841-960	0	1	0	1	0	2
Total	97	75	14	16	6	208

Table 4

Responses by Age to: The Marine Environment Can Be Used Wisely, to the Benefit of All of the States Citizens, Without Being Damaged (Item 3)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	58	66	9	9	2	144
241-360	5	7	1	2	1	16
361-480	7	13	2	1	1	24
481-600	5	1	0	3	1	10
601-720	1	6	0	0	0	7
721-840	2	3	0	0	0	5
841-960	0	2	0	0	0	2
Total	78	98	12	15	5	208

Table 5

Responses by Age to: In Order to Make Wise Decisions Concerning Coastal and Offshore Areas, One Must Have Some Knowledge of Sea Life in These Areas and How Man Relates to the Total Scheme (Item 4)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	73	56	10	5	0	144
241-360	9	7	0	0	0	16
361-480	12	12	0	0	0	24
481-600	6	3	0	1	0	10
601-720	1	6	0	0	0	7
721-840	2	3	0	0	0	5
841-960	0	2	0	0	0	2
Total	103	89	10	6	0	208

Table 6

Responses by Age to: Our Children Should be Provided With as Much Information as Possible Concerning the Marine Environment (Item 5)

Age Range in Months	Strongly Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	53	64	25	1	144
241-360	9	7	0	0	16
361-480	10	12	2	0	24
481-600	6	2	0	1	10
601-720	0	5	2	0	7
721-840	2	3	0	0	5
841-960	0	2	0	0	2
Total	80	95	29	2	208

Table 7

Responses by Age to: Children Can Learn Much About the Marine Environment at an Early Age (Item 6)

Age Range in Months	Strongly Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	34	79	22	0	144
241-360	6	10	0	0	16
361-480	8	15	1	0	24
481-600	4	3	0	0	10
601-720	0	6	0	1	7
721-840	1	3	1	0	5
841-960	0	2	0	0	2
Total	53	118	24	1	208

Table 8

Responses by Age to: The Schools Would be a Good Place to Teach Children About the Marine Environment (Item 7)

Age Range in Months	Strongly Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	53	68	11	0	144
241-360	4	9	3	0	16
361-480	7	14	2	0	24
481-600	4	5	0	1	10
601-720	0	4	2	1	7
721-840	0	2	2	0	5
841-960	0	2	0	0	2
Total	68	104	20	2	208

Table 9

Responses by Age to: Before Being Allowed to Present Information About the Marine Environment, Teachers Should be Required to Undergo Some Sort of Training in This Area e.g. a Marine Science Education Course or a Marine Science Education Workshop (Item 8)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	54	74	13	3	0	144
241-360	5	9	2	0	0	16
361-480	10	10	1	3	0	24
481-600	5	2	1	2	0	10
601-720	2	2	3	0	0	7
721-840	2	3	0	0	0	5
841-960	0	2	0	0	0	2
Total	78	102	20	8	0	208

Table 10

Responses by Age to: Some Marine Science Instruction Is Already Offered In Our School System (Item 9)

Age Range	Know	Don't Know	Total
120-240	60	84	144
241-360	7	9	16
361-480	6	18	24
481-600	4	6	10
601-720	1	6	7
721-840	1	4	5
841-960	0	2	2
Total	79	129	208

Table 11

Responses by Age to: Provided There Is No Great Increase in Tax Load, Marine Science Instruction Should Be Offered from Kindergarten Through Grade 12 (Item 10a)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	15	44	36	43	6	144
241-360	2	7	0	7	0	16
361-480	4	12	2	4	1	23
481-600	2	4	0	3	1	10
601-720	0	3	0	3	1	7
721-840	0	1	2	2	0	5
841-960	0	1	0	1	0	2
Total	23	72	40	63	9	207

Table 12

Responses by Age to: Marine Science Instruction Should be Offered from Grades 7 Through 12 (Item 10b)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	32	59	21	21	0	133
241-360	2	5	2	3	0	12
361-480	6	10	2	2	2	22
481-600	2	4	0	1	1	8
601-720	0	5	0	1	1	7
721-840	0	4	1	0	0	5
841-960	0	1	0	1	0	2
Total	42	88	26	29	4	189

Table 13

Responses by Age to: Marine Science Instruction Should be Offered from Grades 9 through 12 (Item 10c)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	27	36	18	43	6	130
241-360	0	5	0	3	1	9
361-480	4	5	4	4	2	19
481-600	1	3	0	1	2	7
601-720	0	2	1	2	1	6
721-840	0	1	1	1	0	3
841-960	0	2	0	0	0	2
Total	32	54	24	54	12	174

Table 14

Responses by Age to: Career and Vocational Information About the Marine Sciences is Part of a Good Marine Science Educational Program (Item 11)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	30	89	23	2	0	144
241-360	4	11	1	0	0	16
361-480	6	15	2	1	0	24
481-600	3	6	0	1	0	10
601-720	0	7	0	0	0	7
721-840	0	3	2	0	0	5
841-960	0	2	0	0	0	2
Total	43	133	28	4	0	208

Table 15

Responses by Age to: The Public Schools are Not a Good Place to Offer Marine Science Instruction, Children Will Learn All They Need to Know About the Marine Environment from Daily Life Activities. They Will Know Enough About this Environment to Make Wise Decisions About it When Future Questions Arise (Item 12)

Age Range in Months	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
120-240	6	12	10	54	62	144
241-360	0	3	1	8	4	16
361-480	0	1	2	12	9	24
481-600	1	0	0	6	3	10
601-720	0	1	0	6	0	7
721-840	0	0	2	3	0	5
841-960	0	0	1	1	0	2
Total	7	17	16	90	78	208

Table 16

Responses by Distance to: The Marine Environment, for Example, the Seashore and Off Shore Areas Are Very Important to Our Everyday Lives (Item 1)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	50	25	2	3	1	81
21-40	16	21	2	2	0	41
41-60	22	16	2	1	0	41
61-80	4	4	0	0	0	8
81-100	17	12	2	3	0	34
101-120	2	1	0	0	0	3
Total	111	79	8	9	1	208

Table 17

Responses by Distance to: The Seashore Areas Belong to Everyone (Item 2)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	32	32	5	9	3	81
21-40	16	18	2	4	1	41
41-60	25	11	4	1	0	41
61-80	4	4	0	0	0	8
81-100	17	10	3	2	2	34
101-120	3	0	0	0	0	3
Total	97	75	14	16	6	208

Table 18

Responses by Distance to: The Marine Environment Can Be Used Wisely, to the Benefit of All the States Citizens, Without Being Damaged (Item 3)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	28	34	4	10	5	81
21-40	13	22	3	3	0	41
41-60	20	16	3	2	0	41
61-80	1	6	1	0	0	8
81-100	14	19	1	0	0	34
101-120	2	1	0	0	0	3
Total	78	98	12	15	5	208

Table 19

Responses by Distance to: In Order to Make Wise Decisions Concerning the Coastal and Off Shore Areas, One Must Have Some Knowledge of Sea Life in These Areas and How Man Relates to the Total Scheme (Item 4)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	42	36	1	2	0	81
21-40	18	20	1	2	0	41
41-60	22	15	3	1	0	41
61-80	5	3	0	0	0	8
81-100	14	15	4	1	0	34
101-120	2	0	1	0	0	3
Total	103	89	10	6	0	208

Table 20

Responses by Distance to: Our Children Should be Provided With as Much Information as Possible Concerning the Marine Environment (Item 5)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	36	34	7	2	2	81
21-40	13	24	4	0	0	41
41-60	13	20	6	0	0	41
61-80	4	3	1	0	0	8
81-100	12	14	8	0	0	34
101-120	2	0	1	0	0	3
Total	80	95	29	2	2	208

Table 21

Responses by Distance to: Children Can Learn Much About the Marine Environment at an Early Age (Item 6)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	27	44	6	3	1	81
21-40	6	25	4	6	0	41
41-60	8	23	9	1	0	41
61-80	2	5	1	0	0	8
81-100	8	21	3	2	0	34
101-120	2	0	1	0	0	3
Total	53	118	24	12	1	208

Table 22

Responses by Distance to: The Schools Would be a Good Place to Teach Children About the Marine Environment (Item 7)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	26	37	12	4	2	81
21-40	15	22	1	3	0	41
41-60	13	22	3	3	0	41
61-80	4	3	1	0	0	8
81-100	8	19	3	4	0	34
101-120	2	1	0	0	0	3
Total	58	104	20	14	2	208

Table 23

Responses by Distance to: Before Being Allowed to Present Information About the Marine Environment, Teachers Should be Required to Undergo Some Sort of Training in this Area e.g. a Marine Science Education Course or a Marine Science Education Workshop (Item 8)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	32	32	13	4	0	81
21-40	10	26	2	3	0	41
41-60	19	20	1	1	0	41
61-80	2	6	0	0	0	8
81-100	13	17	4	0	0	34
101-120	2	1	0	0	0	3
Total	78	102	20	8	0	208

Table 24

Responses by Distance to: Some Marine Science Instruction Is Already Offered In Our School System (Item 9)

Distance Range in Miles	Know	Don't Know	Total
0-20	42	39	81
21-40	17	24	41
41-60	9	32	41
61-80	1	7	8
81-100	9	25	34
101-120	1	2	3
Total	79	129	208

Table 25

Responses by Distance to: Provided there Is No Great Increase in Tax Load, Marine Science Instruction Should be Offered from Kindergarten through Grade 12 (Item 10a)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	9	35	11	21	5	81
21-40	3	14	7	16	1	41
41-60	5	10	12	11	2	40
61-80	0	3	1	4	0	8
81-100	5	9	8	11	1	34
101-120	1	1	1	0	0	3
Total	23	72	40	63	9	207

Table 26

Responses by Distance to: Marine Science Instruction Should be Offered from Grades 7 through 12 (Item 10b)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	18	29	9	13	4	73
21-40	5	21	4	6	0	36
41-60	9	14	11	4	0	38
61-80	1	6	0	1	0	8
81-100	8	18	1	5	0	32
101-120	1	0	1	0	0	2
Total	42	88	26	29	4	189

Table 27

Responses by Distance to: Marine Science Instruction Should be Offered from Grades 9 through 12 (Item 10c)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	15	17	9	17	7	65
21-40	9	8	4	12	1	34
41-60	3	13	6	12	4	38
61-80	0	2	0	6	0	8
81-100	5	13	5	7	0	30
101-120	0	1	0	0	0	1
Total	32	54	24	54	12	176

Table 28

Responses by Distance to: Career and Vocational Information About the Marine Sciences Is Part of a Good Marine Sciences Educational Program (Item 11)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	20	47	10	4	0	81
21-40	11	22	8	0	0	41
41-60	5	30	6	0	0	41
61-80	0	8	0	0	0	8
81-100	5	25	4	0	0	34
101-120	2	1	0	0	0	3
Total	43	133	28	4	0	208

Table 29

Responses by Distance to: The Public Schools are Not a Good Place to Offer Marine Science Instruction, Children Will Learn All They Need to Know About the Marine Environment from Daily Life Activities. They Will Know Enough About this Environment to Make Wise Decisions About it When Future Questions Arise (Item 12)

Distance Range in Miles	Strongly Agree	Agree	No Opinion	Dis Agree	Strongly Disagree	Total
0-20	2	7	6	33	33	81
21-40	0	2	5	19	15	41
41-60	2	1	0	19	19	41
61-80	1	1	0	6	0	8
81-100	2	6	5	12	9	34
101-120	0	0	0	1	2	3
Total	7	17	16	90	78	208

22
EATON'S
CORRASABLE
BOND
23
USA
BELLCHIE

Table 30

Pearson Correlations Between Age and Distance Domociled
from the Coast and Questionnaire Items

Item Number	Age Corr.	Age Significance	Distance Corr.	Distance Significance
1	.052	.455	.067	.335
2	.235	.001	-.116	.094
3	.067	.331	-.213	.002
4	.006	.926	.079	.257
5	-.009	.890	.028	.681
6	-.016	.810	.052	.454
7	.150	.030	-.038	.581
8	.083	.231	-.096	.166
9	.125	.071	.204	.003
10a	-.013	.844	.015	.824
10b	.071	.308	-.078	.262
10c	-.067	.334	.017	.797
11	.027	.693	-.041	.549
12	-.065	.349	-.115	.096